1. Record Nr. UNINA9910829907703321

Autore	Hu Feifang <1964->
Titolo	The theory of response-adaptive randomization in clinical trials [[electronic resource] /] / Feifang Hu, William F. Rosenberger
Pubbl/distr/stampa	Hoboken, N.J., : Wiley-Interscience, c2006
ISBN	1-280-64911-9 9786610649112 0-470-05588-X 0-470-05587-1
Descrizione fisica	1 online resource (234 p.)
Collana	Wiley Series in Probability and Statistics ; ; v.525
Altri autori (Persone)	RosenbergerWilliam F
Disciplina	610.724
Soggetti	Clinical trials
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and indexes.
Nota di contenuto	The Theory of Response-Adaptive Randomization in Clinical Trials; Dedication; Contents; Preface; 1 Introduction; 1.1 Randomization in clinical trials; 1.1.1 Complete randomization; 1.1.2 Restricted randomization procedures; 1.1.3 Response-adaptive randomization procedures; 1.1.4 Covariate-adaptive randomization procedures; 1.1.5 Covariate-adjusted response-adaptive randomization procedures; 1.2 Response-adaptive randomization in a historical context; 1.3 Outline of the book; 1.4 References; 2 Fundamental Questions of Response-Adaptive Randomization; 2.1 Optimal allocation 2.2 The relationship between power and response-adaptive randomization2.3 The relationship for K > 2 treatments; 2.4 Asymptotically best procedures; 2.5 References; 3 Likelihood-Based Inference; 3.1 Data structure and likelihood; 3.2 Asymptotic properties of maximum likelihood estimators; 3.3 The general result for determining asymptotically best procedures; 3.4 Conclusions; 3.5 References; 4 Procedures Based on Urn Models; 4.1 Generalized Friedman 's urn; 4.1.1 Historical results on asymptotic properties; 4.1.2 Assumptions and notation; 4.1.3 Main asymptotic theorems; 4.1.4 Some examples 4.1.5 Proving the main theoretical results4.2 The class of ternary urn models; 4.2.1 Randomized Polya urn; 4.2.2 Birth and death urn; 4.2.3

Drop-the-loser rule; 4.2.4 Generalized drop-the-loser rule; 4.2.5 Asymptotic properties of the GDL rule; 4.3 References; 5 Procedures Based on Sequential Estimation; 5.1 Examples; 5.2 Properties of procedures based on sequential estimation for K = 2; 5.3 Notation and conditions for the general framework; 5.4 Asymptotic results and some examples; 5.5 Proving the main theorems; 5.6 References; 6 Sample Size Calculation
6.1 Power of a randomization procedure6.2 Three types of sample size; 6.3 Examples; 6.3.1 Restricted randomization; 6.3.2 Response-adaptive randomization; 6.4 References; 7 Additional Considerations; 7. 1 The effects of delayed response; 7.2 Continuous responses; 7.2.1 Asymptotic variance of the four procedures; 7.3 Multiple (K > 2) treatments; 7.4 Accommodating heterogeneity; 7.4.1 Heterogeneity based on time trends; 7.4.2 Heterogeneity based on covariates; 7.4.3 Statistical inference under heterogeneity; 7.5 References; 8 Implications for the Practice of Clinical Trials; 8.1 Standards
8.2 Binary responses8.3 Continuous responses; 8.4 The effects of delayed response; 8.5 Conclusions; 8.6 References; 9 Incorporating Covariates; 9.1 Introduction and examples; 9.1.1 Covariate-adaptive randomization procedures; 9.1.2 CARA Randomization Procedures; 9.2 General framework and asymptotic results; 9.2.1 The procedure for K treatments; 9.2.2 Main theoretical results; 9.3 Generalized linear models; 9.4 Two treatments with binary responses; 9.4.1 Power; 9.5 Conclusions; 9.6 References; 10 Conclusions and Open Problems; 10.1 Conclusions; 10.2 Open problems; 10.3 References
Appendix A: Supporting Technical Material

Sommario/riassunto

Presents a firm mathematical basis for the use of response-adaptive randomization procedures in practice The Theory of Response-Adaptive Randomization in Clinical Trials is the result of the authors' ten-year collaboration as well as their collaborations with other researchers in investigating the important questions regarding response-adaptive randomization in a rigorous mathematical framework. Response-adaptive allocation has a long history in biostatistics literature; however, largely due to the disastrous ECMO trial in the early 1980s, there is a general reluctance to use t